DATA SHEET

BlackDiamond 8000 Series Switches

With 8500/8800/8900 Series Modules

HIGH AVAILABILITY

- Redundant system design
- Modular ExtremeXOS® Operating System (OS) for non-stop operation
- Ethernet Automatic Protection Switching (EAPS) resiliency protocol

HIGH-PERFORMANCE CONNECTIVITY AND LOW POWER CONSUMPTION

- High-density gigabit, 10 Gigabit and 40 Gigabit Ethernet switch
- Large switching capacity capable of supporting 2,840 Mpps
- Convergence-ready connectivity with Voice-over-IP (VoIP) automatic provisioning
- Flexible connectivity options for multiple applications
- Low power consumption for reduced power and cooling costs
- Tunable Dense Wavelength Division Multiplexing (DWDM) for reduced fiber run counts

COMPREHENSIVE SECURITY

- Universal Port dynamic security profile to provide fine-grained security policies
- Threat detection and response instrumentation to react to network intrusion with CLEAR-Flow Security Rules Engine
- Hardened network infrastructure
- Common Criteria EAL3+ Certified

BlackDiamond® 8800 series switches simplify enterprise, data center and service provider networks.

Enterprise IT managers and service providers have limited time or resources to deal with overly complex, specialized network infrastructure solutions. BlackDiamond 8800 series switches from Extreme Networks® simplify the architecture. Purpose-built core, aggregation, edge and data center/service provider modules can meet your chassis needs across the network. BlackDiamond 8800 series switches deliver voice-class availability, high-density Power over Ethernet (PoE), Gigabit Ethernet (GbE), and 10 GbE wherever it's needed.

With three families of modules to choose from, the BlackDiamond 8800 series switches can support a wide variety of applications. In enterprise and data center networks, traditional three-tier architectures can be replaced with a streamlined two-tier network that helps reduce management overhead, operational complexity and capital expenditures. It serves well as a high-performance Enterprise core and Data Center switch. The ports interconnect thousands of servers for High Performance Cluster Computing (HPCC).

The BlackDiamond 8800 series switches with 8900-xl series modules meet the needs of next generation service provider transport networks for converged services and are ideal for deployment at the metro core and mobile backhaul aggregation hub. BlackDiamond 8900-xm 40 Gigabit modules meet the needs of next-generation data centers and service providers. A full range of Layer 2 - 4 features for IPv4 and IPv6 allow the aggregation of high-speed connections, minimizing bottlenecks between edge and core. BlackDiamond 8800 fits well at the edge of the most demanding enterprises, with Voice-over-IP, video, wireless and data traffic. The multifaceted BlackDiamond 8800 series switches support IPv6 today, preparing the enterprise for the future.

Target Applications

- High-performance core switch for medium to large enterprise networks
- Scalable and resilient switch for metro core and mobile backhaul cell site aggregation hub
- High-density switch providing low-latency connections at low power for data centers and HPCC
- Cost-effective wiring closet/edge switch for small to medium enterprises

High Availability

A high-performance network connection, whether used to connect PCs and IP telephones at the access layer or to interconnect servers in a cluster, is only useful if it is also highly available. BlackDiamond 8800 series modular switching family incorporates extensive hardware redundancy and a modular OS—ExtremeXOS—that provides the network recovery required by converged applications.

Redundant System Design

REDUNDANT MANAGEMENT MODULES

The BlackDiamond 8800 series of modular switches are configured with an automatic failover mechanism so that if one Management Switch Module (MSM) fails, the second MSM will automatically take over management responsibility for the entire switch. This feature is critical for networks running voice and other mission-critical applications. (This capability is not available for the BlackDiamond 8500-series modules.)

ADVANCED CHASSIS DESIGN FOR AVAILABILITY

BlackDiamond 8800 series switches include a passive backplane complemented by high availability design elements such as isolated control and data planes, redundant controller boards for power distribution, and fan control and environmental monitoring to identify anomalies before they affect network availability.

REDUNDANT LOAD SHARING POWER SUPPLIES

BlackDiamond 8800 series switches support a set of redundant power configurations that can load share up to six internal power supplies simultaneously. Three power supplies in a 2 + 1 redundancy configuration can power a fully loaded chassis with gigabit or 10 Gigabit Ethernet ports. In addition, without the need of an external power tray, three power supplies are available to support large PoE implementations.

REDUNDANT COOLING FANS IN A HOT-SWAPPABLE FAN TRAY

Redundant cooling is delivered by a tray of nine fans (BlackDiamond 8810) or six fans (BlackDiamond 8806). The fan tray itself is hot swappable so the BlackDiamond 8800 series switches keep operating while the fan tray is replaced.

Modular Operating System for Non-Stop Operations

PREEMPTIVE MULTITASKING AND PROTECTED MEMORY

BlackDiamond 8800 series switches allow each of many protocols such as Open Shortest Path First (OSPF) and Spanning Tree to run as separate OS processes that are protected from each other. This drives increased system integrity and inherently protects against Denial of Service (DoS) attacks.

PROCESS MONITORING AND RESTART

ExtremeXOS dramatically increases network availability using process monitoring and restart. Each independent OS process is monitored in real time. If a process becomes unresponsive or stops running, it can be automatically restarted.

LOADABLE SOFTWARE MODULES

The modular design of ExtremeXOS allows the upgrading of individual software modules, should this be necessary, leading to higher availability in the network (see Figure 1).

High Availability Network Protocols

ETHERNET AUTOMATIC PROTECTION SWITCHING (EAPS)

EAPS allows the IP network to provide the level of resiliency and uptime that users expect from their traditional voice networks. EAPS is more adaptable than Spanning Tree or Rapid Spanning Tree Protocols, offering sub-second (less than 50 milliseconds) recovery and delivering consistent failover regardless of number of VLANs, number of network nodes or network topology. In most situations, VoIP calls will not drop and digital video feeds will not freeze or pixelize because EAPS allows the network to recover almost transparently from link failure.

SPANNING TREE/RAPID SPANNING TREE PROTOCOLS

BlackDiamond 8800 series switches support Spanning Tree (802.1D), Per VLAN Spanning Tree (PVST+), Rapid Spanning Tree (802.1w) and Multiple Instances of Spanning Tree (802.1s) protocols for Layer 2 resiliency.

SOFTWARE ENHANCED AVAILABILITY

Software enhanced availability allows users to remain connected to the network even if part of the network infrastructure is down. BlackDiamond 8800 series switches constantly check for problems in the uplink connections using advanced Layer 3 protocols such as OSPF, VRRP and Extreme Standby Router Protocol™ (ESRP, supported in Layer 2 or Layer 3), and dynamically route around the problem.

EQUAL COST MULTIPATH ROUTING

Equal Cost Multipath (ECMP) routing enables uplinks to be load balanced for performance and cost savings while also supporting redundant failover. If an uplink fails, traffic is automatically routed to the remaining uplinks and connectivity is maintained.

LINK AGGREGATION (802.3AD)

Cross-module link aggregation enables trunking of up to eight links on a single logical connection, for up to 80 Gbps of redundant bandwidth per logical connection.

MULTI-SWITCH LINK AGGREGATION GROUPS (M-LAG)

M-LAG can address bandwidth limitations and improve network resiliency, in part by routing network traffic around bottlenecks, reducing the risks of a single point of failure, and allowing load balancing across multiple switches.

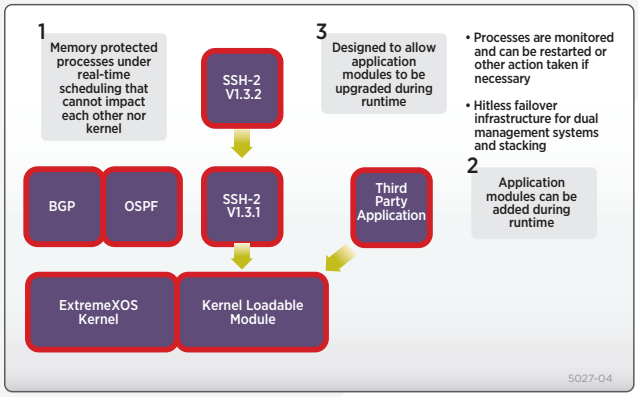


Figure 1: ExtremeXOS Modular Design

High-Performance Connectivity

BlackDiamond 8800 series switches deliver high-performance, cost-effective connectivity to address networking trends such as the increasing number of devices at the edge of the network: IP telephones, wireless Access Points (APs), and other devices. These networking trends drive the requirement for Gigabit Ethernet to the desktop and the use of 10 Gigabit Ethernet as an interconnect technology.

Large Switching Capacity

BlackDiamond 8800 series switches deliver 3.8 Tbps of switching bandwidth, and over 2,840 Mpps Layer 2 – Layer 3 hardware forwarding rate.

- 256 Gbps per slot bidirectional bandwidth
- Local switching on every I/O module

HIGH-DENSITY, LINE-RATE CONNECTIVITY

BlackDiamond 8800 series switches support up to 2,352 gigabit ports or up to 582 10 Gigabit Ethernet ports in a single seven-foot rack, allowing BlackDiamond 8800 series switches to deliver cost-effective connectivity for a range of edge, aggregation, core and data center needs.

JUMBO FRAME SUPPORT

Supporting jumbo frames allows cluster computing applications to optimize network performance.

IPV6 PACKET FORWARDING SUPPORT

IPv6 makes available trillions of new IP addresses and offers better address allocation, address aggregation, and features that provide significantly greater end-to-end connectivity and services. BlackDiamond 8800 series switches support IPv6 today, and enable enterprises to get ready to handle IPv6 traffic as this traffic enters their networks.

Convergence-Ready Connectivity with VoIP Automatic Provisioning

VOICE-GRADE CONNECTIONS

BlackDiamond 8800 series switches support 8 queues per port and a range of QoS technologies that can prioritize and predictably handle high-priority traffic policing or rate-limiting on ingress, 802.1q tagging and DiffServ marking, and shaping on egress. The Extreme Networks tradition of building products with low latency and jitter continues with BlackDiamond 8800 series switches, allowing network managers to build high-performance networks.

HIGH-DENSITY POE

PoE allows BlackDiamond 8800 series switches to support large IP Telephony and wireless AP deployments. BlackDiamond 8810 can support up to 333 Class 3 ports in a single 14RU chassis or can power a maximum of 432 PoE ports in a single chassis with Class 1 or 2 power. No external power trays are needed in order to power up fully loaded BlackDiamond 8800 series switches with Class 1, 2 or 3 devices.

LINK LAYER DISCOVERY PROTOCOL (LLDP) SUPPORT

BlackDiamond 8800 series switches incorporate LLDP to simplify troubleshooting of enterprise networks and enhance the ability of network management tools to discover and maintain accurate network topologies.

UNIVERSAL PORT—VOICE-OVER-IP (VOIP) AUTO PROVISIONING

BlackDiamond 8800 series switches set the stage for convergence applications by allowing enterprises to add new access devices in a non-disruptive plug-and-play fashion. Voice and wireless services can be easily implemented without major network upgrades. BlackDiamond 8800 series switches support automatic provisioning of VoIP using LLDP and event-based command scripting capability. It allows dynamic configuration of voice VLANs and QoS. This auto-configuration capability allows you to configure VoIP phone settings such as voice VLAN settings, call server IP address configuration, etc. This level of simplicity in managing network changes can help reduce operating expenses.

Flexible Connectivity

The BlackDiamond 8800 series switches support virtualization, specifically virtual routing and dynamic movement of virtual servers.

Support for Virtualized Data Centers

Direct Attach™ eliminates switching at the virtual switch layer, simplifying the network and improving performance. Direct Attach enables data center simplification by reducing network tiers from 4 or 5 tiers to just 3 or 2 tiers, depending on the size of the data center. (Requires the Direct Attach Feature Pack, part number 11011.)

XNV™ (ExtremeXOS Network Virtualization) is a set of software modules for the ExtremeXOS® based switching product portfolio, and is available via the Data Center Feature Pack

for Extreme Networks Ridgeline™, a network and service management application. XNV brings insight, control and automation for highly virtualized data centers to the network.

Priority-based Flow Control (PFC, or IEEE 802.1Qbb) allows network traffic to be controlled independently based on Class of Service. PFC allows network traffic that requires lossless traffic throughput to be prioritized, while other traffic types that do not require or perform better without PFC can continue as normal. (Requires 8900-10G24X-c I/O module(s), part number 41632B.)

Support for Service Provider Metro Core and Mobile Backhaul Applications

The BlackDiamond 8800 series with 8900-xl or -xm series modules offers up to 198 line-rate 10 GbE ports, 1,200 GbE ports (fiber or copper), or 48 40 GbE ports in a seven-foot rack, providing outstanding services capacity. High port density and resiliency through EAPS makes this series an ideal core or aggregation solution for next-generation packet transport networks. Whether deployed as a metro core switch or at the cell-site aggregation hub for mobile backhaul, these switches provide high-performance converged services over a single transport network—including residential triple-play, business Ethernet and mobile voice and data services. A single transport network provides cost savings by eliminating the need for multiple overlay networks.The switches support IEEE 802.1ag Continuity Fault Management for proactive service management, and hardware support for multicast quality of service.

Tunable DWDM support allows service providers and others to tune XFP 10 Gigabit Ethernet optics to a specific frequency, reducing the need for additional fiber runs and XFP sparing. Digital Diagnostics Monitoring Interface (DDMI) support allows service providers to monitor and diagnose pluggable optics in real-time.

Low Power Consumption

The BlackDiamond 8800 series switches typically consume 1.5 Watts (2.1 Watts maximum) per Gigabit Ethernet port and 7.0 Watts (10.4 Watts maximum) per 10 Gigabit Ethernet port. This is significantly lower than other switches in the industry, and can provide considerable savings in power and cooling costs.

Ease of Management

Extreme Networks has developed tools that save you time and resources in managing your network. The Universal Port capability allows auto-configuration of VoIP phones, for example, providing simplicity in managing network changes. Ridgeline network and service management provides fault, configuration, accounting, performance and security functions, allowing more effective management of Extreme Networks products, solutions and third-party devices, in a converged network.

For carrier networks, Ridgeline enables the shift from reactive circuit monitoring to proactive service management. The key features integrated into the Service Advisor Feature Pack unify service fulfillment, service assurance and service engineering to enable carriers to more effectively manage next-generation residential triple play, business Ethernet and Ethernet mobile backhaul services.

Investment Protection

With a wide range of available I/O and management modules, the versatile BlackDiamond 8800 series switches provide superior investment protection over the product lifetime. For example, the BlackDiamond 8500-series modules can support wiring closet or small enterprise edge applications; at a later date, BlackDiamond 8800 c-series modules can be implemented to support medium-sized enterprise core deployment or aggregation. And the BlackDiamond 8900-series modules, with their high performance and high density, can support large enterprises or interconnection for data centers and HPCC applications. Past and current generations of modules are compatible with any BlackDiamond 8800 series chassis.

TARGET APPLICATIONS	8900-SERIES MODULES						8800 C-SERIES MODULES						8500-SERIES MODULES	
I/O Module Name	8900-40G6X-xm	8900-10G8X-xl	8900-G48X-xl	8900-G48T-xl	8900-G96T-c	8900-10G24X-c	G24Xc	G48Te2	G48Tc	G48Xc	10G4Xc	10G8Xc	8500-G24X-e	8500-G48T-e
ACL Hardware Resources	4k	60k ACLs	60k ACLs	60k ACLs	8k ACLs per 48-port block	2k ACLs per 12-port block	4k ACLs per 24-port block	1k ACLs per 24-port block	4k ACLs per 24-port block	4k ACLs per 24-port block	4k ACLs per 2-port block	4k ACLs per 2-port block	1k ACLs per 24-port block	1k ACLs per 24-port block
Policy Based Routing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
sFlow® Sampling	Yes	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware
IPFIX	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
CLEAR-Flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
10/100/1000 BASE-T Ports	/	/	/	48	96	/	/	48	48	/	/	/	/	48
PoE	/	/	/	S-PoE Card	/	/	/	S-PoE Card	S-PoE Card	/	/	/	/	S-PoE Card
1000BASE-X Ports	/	/	48	/	/	24 SFP	24 SFP	/	/	48 SFP	/	/	24 SFP	/
10GBASE-X Ports	24 (using breakout cables with 40GBASE-SR4 optics	8 XFP	/	/	/	24 SFP+	/	/	/	/	4 XFP	8 XFP	/	/
40GBASE-X Ports	6	/	/	/	/	/	/	/	/	/	/	/	/	/
Backplane capacity (Gbps) 2 MSM/1 MSM	160/80	128/64	128/64	128/64	128/64	128/64	48/24	48/24	48/24	48/24	48/24	48/24	48/24	48/14
Load Sharing Groups	128	128	128	128	128	128	128	128	128	128	128	128	128	128
Layer 2 MAC FDB	128k	512k	512k	512k	32k	32k	32k	8k	32k	32k	32k	32k	8k	8k
IPv4 Longest Prefix Match (LPM) Entries	16k	512k	512k	512k	12k	12K	12K	480	12K	12K	12K	12K	480	480
IPv4 Host Table	6k	16k	16k	16k	8k	8k	6k	1k	6k	6k	6k	6k	1k	1k
Extended IPv4 Host Cache	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Multicast (S,G,V)	3k	6k	6k	6k	6k	6k	2k	1k	2k	2k	2k	2k	1k	1k
IPv6 Forwarding	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware	Hardware

Figure 2: Connectivity Options by I/O Module

TARGET APPLICATIONS	8900-SERIES MODULES						8800 C-SERIES MODULES						8500-SERIES MODULES	
I/O Module Name	8900-40G6X-xm	8900-10G8X-xl	8900-G48X-xl	8900-G48T-xl	8900-G96T-c	8900-10G24X-c	G24Xc	G48Te2	G48Tc	G48Xc	10G4Xc	10G8Xc	8500-G24X-e	8500-G48T-e
High-Performance Enterprise Core		√	√	√		√	√		√	√	√	√		
Enterprise Data Centers	√	√	√	√	√	√	√		√	√	√	√		
Traditional Aggregation Layer		√	√	√		√	√		√	√	√	√		
High-Density Gigabit Edge					√			√					√	√
High Performance Cluster Computing	√	√		√	√	√			√		√	√		
Metro Core	√	√	√	√										
Mobile Ethernet Backhaul	√	√	√	√										

Figure 3: I/O Module by Application

	8900-MSM128	8800-MSM-48C	8500-MSM24
CPU	700MHz Dual Core	700MHz Dual Core	700MHz Single Core
DRAM	1GB ECC SDRAM	1GB ECC SDRAM	512MB ECC SDRAM
Flash	512MB Compact Flash	512MB Compact Flash	512MB Compact Flash
Slot Capacity with two MSMs installed	Up to 160Gbps for BlackDiamond 8806 Up to 80Gbps for BlackDiamond 8810	Up to 48Gbps for BlackDiamond 8806 and BlackDiamond 8810	Up to 48Gbps for BlackDiamond 8806 and BlackDiamond 8810
MSM Failover	Hitless Failover	Hitless Failover	Automatic Failover
CLEAR-Flow	Yes		
Gigabit Uplink	Optional 8-port 1G SFP (S-G8Xc)		
10 Gigabit Uplink	Optional 1-port 10G XFP (S-10G1Xc) Optional 2-port 10G SFP+ (S-10G2Xc)		

Figure 4: MSM Module Options

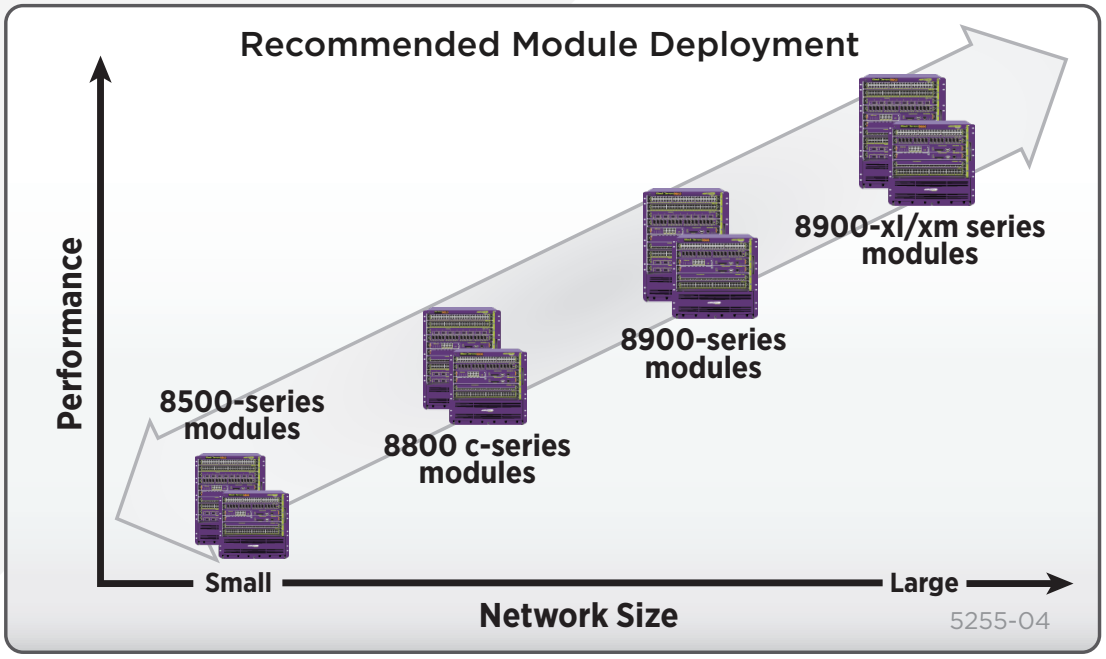


Figure 5: Recommended Module Deployment

Comprehensive Security Management

Implementing a secure network means providing protection at the network perimeter as well as the core. BlackDiamond 8800 series switches use advanced security functions in protecting your network from known or potential threats.

Directory-Integrated Link Security

NETWORK LOGIN AND DYNAMIC SECURITY PROFILE

Network Login capability implemented in ExtremeXOS enforces user admission and usage policies. BlackDiamond 8800 series switches support a comprehensive range of Network Login options by providing an 802.1x agent-based approach, a Web-based (agentless) login capability for guests and a MAC-based authentication model for devices. With these modes of Network Login, only authorized users and devices can connect to the network and be assigned to the appropriate VLAN. The Universal Port scripting framework available in BlackDiamond 8800 series switches lets you implement Dynamic Security Profiles which, in sync with Network Login, allows you to implement fine grained and robust security policies. Upon authentication, the switch can load dynamic ACL/QoS profiles for a user or group of users, to deny/allow access to the application servers or segments within the network.

MULTIPLE SUPPLICANT SUPPORT

Converged network designs often involve the use of shared ports for IP Telephony and wireless access. Multiple supplicant capability on a switch delivers secured access in such designs by uniquely authenticating and applying appropriate policies and VLANs for each user on a shared port.

HOST INTEGRITY CHECKING

Host integrity checking helps keep infected or noncompliant machines off the network. BlackDiamond 8800 series switches support a host integrity or endpoint integrity solution that is based on the model from the Trusted Computing Group.

IDENTITY MANAGER

Identity Manager allows network managers to track users who access their network. User identity is captured based on NetLogin authentication, LLDP discovery and Kerberos snooping. ExtremeXOS uses the information to then report on the MAC, VLAN, computer hostname, and port location of the user. Further, Identity Manager can create both roles and policies, and then bind them together to create role-based profiles based on organizational structure or other logical groupings, and apply them across multiple users to allow appropriate access to network resources.

Threat Detection and Response

CLEAR-FLOW SECURITY RULES ENGINE

CLEAR-Flow Security Rules Engine provides first order threat detection and mitigation, and mirrors traffic to third-party security appliances such as an IDS/IPS for further analysis of suspicious traffic in the network. CLEAR-Flow provides cost-effective scalability of security threat detection.

SFLOW

sFlow® is a sampling technology that provides the ability to sample application-level traffic flows on all interfaces simultaneously.

IPFIX HARDWARE SUPPORT

IPFIX (Internet Protocol Flow Information eXport) is a complementary protocol to sFlow. IPFIX gathers information about network flows through the switch and sends the information to an external collector. Selected 8900-series I/O modules for BlackDiamond 8800 series switches include hardware support to keep track of the flow records. See product specifications for more information.

PORT MIRRORING

BlackDiamond 8800 series switches support many-to-one and cross module port mirroring. This capability can be used to mirror traffic to an external network appliance such as an intrusion detection device for trend analysis or be utilized by a network administrator as a diagnostic tool when fending off a network attack.

LINE-RATE ACCESS CONTROL LISTS

BlackDiamond 8800 series switches support hardware-based ACLs based on Layer 2, 3 or 4 header information such as the MAC address, IP source/destination address or TCP/UDP port number.

Hardened Network Infrastructure

DENIAL OF SERVICE (DOS) PROTECTION

BlackDiamond 8800 series switches handle DoS attacks gracefully. If the switch detects an unusually large number of packets in the CPU input queue, it will assemble ACLs that automatically stop these packets from reaching the CPU. After a period of time, the ACLs are removed. If the attack continues, they are reinstalled.

POLICY-BASED ROUTING

Policy-based routing provides a flexible mechanism for network administrators to customize the flow of traffic within their networks. ACLs configured on the switch can redirect packets away from their normal path to another physical switch port. Packets are selected according to their ACL match conditions such as QoS, VLAN, IP addresses, protocol, port number or other criteria.

ASIC-BASED LONGEST PREFIX MATCH

LPM routing eliminates the need for control plane software to learn new flows and allows the network to be resilient under a DoS attack.

SECURE MANAGEMENT

The use of protocols like SSH2, SCP and SNMPv3 supported by a BlackDiamond 8800 series switch prevents the interception of management communications and man-in-the-middle attacks.

MD5 AUTHENTICATION OF ROUTING PROTOCOLS

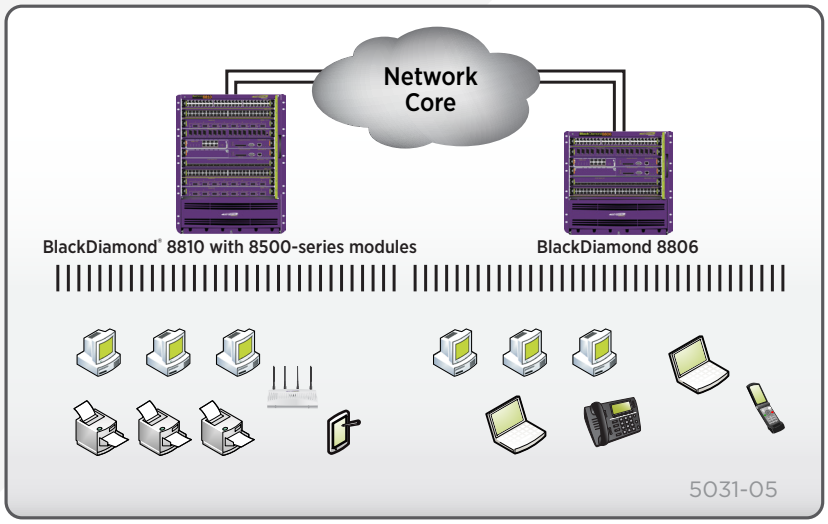
MD5 authentication of routing protocols prevents attackers from tampering with valid messages and attacking routing sessions.

Target Applications

8500-SERIES MODULES

High-Density PoE Edge Switch for the Wiring Closet

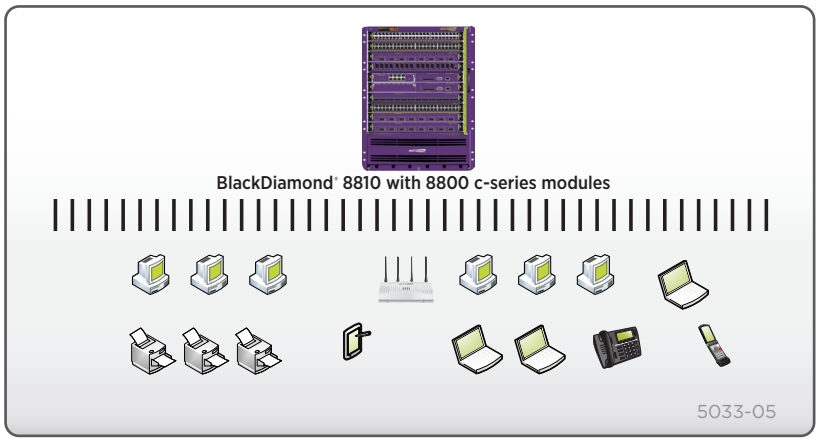
BlackDiamond 8800 series switches deliver high-performance and cost-effective connectivity to address networking trends such as the increasing number of IP telephones, wireless APs and other devices at the edge of the network, Gigabit Ethernet connections to the desktop and the use of gigabit and 10 Gigabit Ethernet as an interconnect technology. BlackDiamond 8800 series switches allow the traditional edge layer and aggregation layer of the network to be collapsed into a single unified access layer.



8800 C-SERIES MODULES

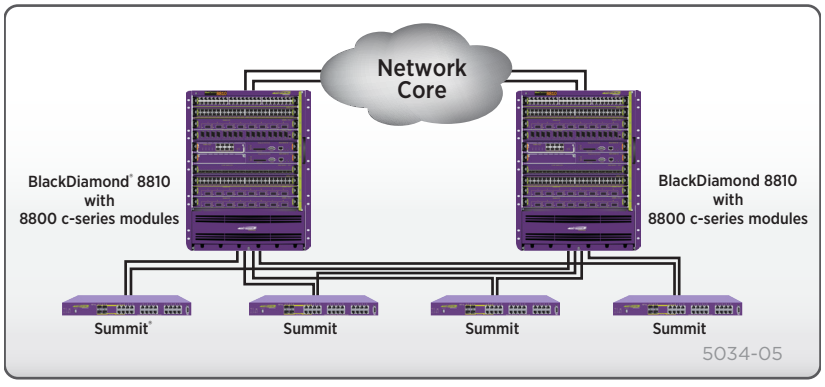
Single Switch Medium-Sized Network

BlackDiamond 8800 series switches provide the small to medium enterprise with an ideal single-switch solution that satisfies their networking needs. The typical multi-switch network can be consolidated into a single highly available switch that delivers high-density PoE for IP Telephony, high speed performance for services and comprehensive security.



Traditional Aggregation Layer

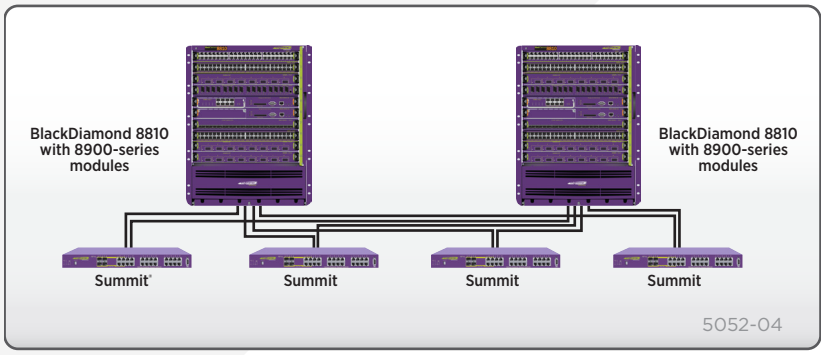
While Extreme Networks believes that a two-tier network is a simpler approach, the layout of a building or campus or the wiring plant sometimes requires an aggregation layer. This layer typically aggregates gigabit or 10 gigabit uplinks from edge switches and connects up to the core through gigabit and/or 10 Gigabit Ethernet uplinks. BlackDiamond 8800 series switches provide high-density gigabit and 10 Gigabit Ethernet that is required for the aggregation layer.



8900-SERIES MODULES

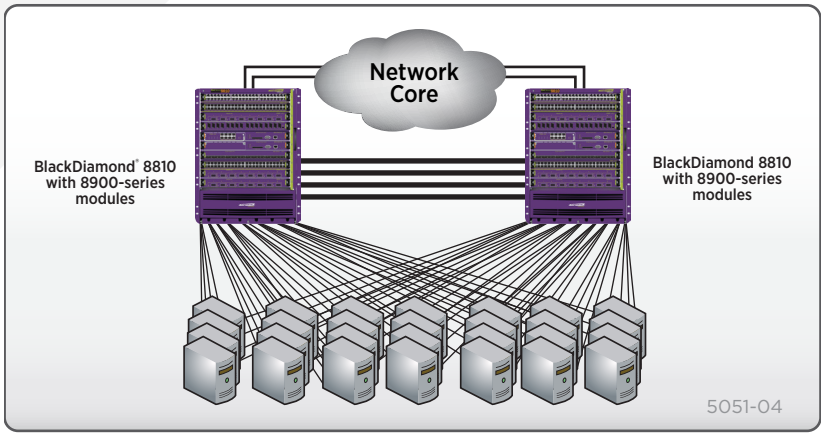
High-Performance Enterprise Core

BlackDiamond 8800 series switches provide the ideal core network for a medium-sized network with high-performance and high density 10 Gigabit Ethernet and Gigabit Ethernet interfaces. Customers can connect up to 192 10 gigabit ports or 768 gigabit ports in a single 14RU BlackDiamond 8810 system.



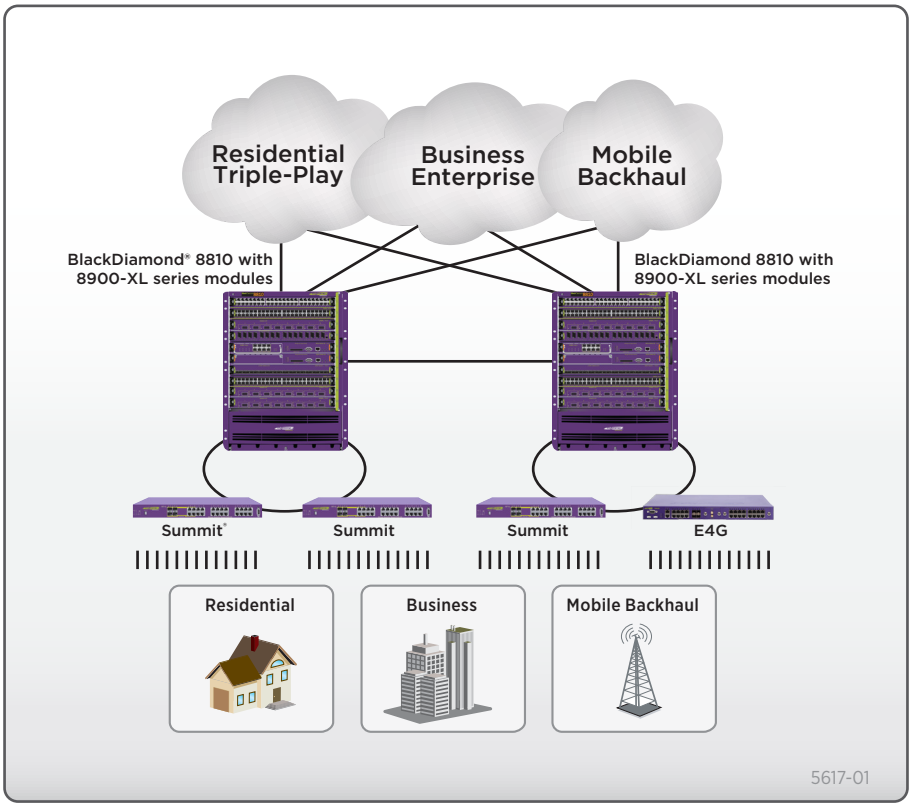
Enterprise Data Centers

High-performance 1 gigabit and 10 gigabit-connectivity at low latency and low power consumption make the BlackDiamond 8800 series a winning switching platform for data centers. The high-density allows 768 wire-speed Gigabit Ethernet ports in a single 14RU chassis at typically 1.5 Watts per port and 192 10 Gigabit Ethernet ports at typically 7.0 Watts per port. This allows customers to save on power and cooling costs while providing the superior switching performance required in the data center. To meet the needs of virtualized data centers, the BlackDiamond 8900-xl series modules can support as many as 512k virtual servers.



Service Provider Metro Core and Mobile Backhaul Networks

The BlackDiamond 8800 series Ethernet Transport switches with 8900-xl and -xm series modules are ideal for high-density metro core supporting residential triple-play and business Ethernet (including E-Line and E-LAN services) and cell site aggregation hub for mobile backhaul deployments. These switches provide high port density, gigabit, 10 GbE or 40 GbE with up to 320 Gbps bidirectional bandwidth capacity per slot.



Supported Protocols and Standards

A list of supported protocols and standards is available on the Extreme Networks website at: http://www.extremenetworks.com/go/xos

TECHNICAL SPECIFICATIONS

General Specifications

SWITCHING CAPACITY

BlackDiamond 8810

- 3.8 Tbps total switching capacity
- 2,840 Mpps Layer 2 HW forwarding rate
- 2,840 Mpps Layer 3 HW forwarding rate

BlackDiamond 8806

- 1,952 Gbps total switching capacity
- 1,420 Mpps Layer 2 HW forwarding rate
- 1,420 Mpps Layer 3 HW forwarding rate

PORT CAPACITY

BlackDiamond 8810

- 72 ports 10GBASE-X (XENPAK) (64 ports if 2 MSMs)
- 768 ports 10/100/1000BASE-T
- 440 ports 1000BASE-X SFP (400 ports if 2 MSMs)
- 216 ports 10GBASE-X SFP+ (192 ports if 2 MSMs)

BlackDiamond 8806

- 40 ports 10GBASE-X (XENPAK) (32 ports if 2 MSMs)
- 384 ports 10/100/1000BASE-T
- 248 ports 1000BASE-X SFP (208 ports if 2 MSMs)
- 120 ports 10GBASE-X SFP+ (96 ports if 2 MSMs)

Management Switch Modules

- The management and switching module contains the control path and the switch fabric for the BlackDiamond 8800

BlackDiamond 8900-Series Modules:
8900-MSM128 BlackDiamond 8900 Management Switch Module, optional I/O port

BlackDiamond 8800 c-Series Modules:
8800-MSM-48c BlackDiamond 8800 Management Switch Module, optional I/O port

BlackDiamond 8500-Series Modules:
8500-MSM-24 BlackDiamond 8500 Management Switch Module, optional I/O port

I/O MODULE OPTIONS

BlackDiamond 8900-Series Modules:
8900-10G8X-xl 8-port 10GBASE-X XFP
8900-G48T-xl 48- port 10/100/1000BASE-T, RJ45, optional PoE
8900-G48X-xl 48-port 1000BASE-X SFP
8900-40G6X-xm 6-port 40GBASE-X QSFP+
8900-G96T-c 96-port 10/100/1000BASE-T Gigabit Ethernet module
8900-10G24X-c 24-port 10GBASE-SFP+

BlackDiamond 8800 c-Series Modules:
G24Xc 24-port 1000BASE-X SFP
G48Xc 48-port 1000BASE-X SFP
G48Tc 48-port 10/100/1000BASE-T Gigabit Ethernet module, optional PoE card
G48Te2 48-port 10/100/1000BASE-T RJ-45, optional PoE card
10G4Xc 4-port 10GBASE-XFP
10G8Xc 8-port 10GBASE-XFP

BlackDiamond 8500-Series Modules:
8500-G24X-e 24-port 1000BASE-X SFP
8500-G48T-e 48-port 10/100/1000BASE-T RJ-45, optional PoE card

PLUGGABLE OPTIONS

- **S-G8Xc** 8-port 1G SFP card (add-on module for MSM)
- **S-10G1Xc** 1-port 10G XFP card (add-on module for MSM)
- **S-10G2Xc** 2-port 10G SFP+ card (add-on module for MSM24, MSM-48c and MSM128)
- **S-PoE** PoE card

IEEE 802.3 STANDARD

G48Te2, G48Tc, and 8500-G48T-e
Gigabit Ethernet modules comply with the following standards

- IEEE 802.3 10BASE-T
- IEEE 802.3u 100BASE-T
- IEEE 802.3ab 1000BASE-T

G24X, G48Xa, G48Xc, and 8500-G24X-e
Gigabit Ethernet modules comply with the following standard

- IEEE 802.3z 1000BASE-X

POWER SUPPLY OPTIONS

Both AC and DC power supplies are available

- AC power supplies can run from 90-264 VAC, and deliver
  - 700W at 90V to 100V, or
  - 1200W at 200V to 220V
- 48V DC power supplies deliver 1200W of power

POWER OVER ETHERNET (POE) 802.3AF

- 333 ports with 802.3af class 0 devices supported with 6 power supplies
- 432 ports with 802.3af class 1 devices supported with 6 power supplies
- 432 ports with 802.3af class 2 devices supported with 6 power supplies
- 333 ports with 802.3af class 3 devices supported with 6 power supplies

Physical Specifications

DIMENSIONS

BlackDiamond 8810 Chassis:
24.47" high x 17.51" wide x 18.23" deep
(62.2 cm x 44.5 cm x 46.3 cm)

BlackDiamond 8806 Chassis:
17.5" high x 17.51" wide x 18.23" deep
(44.45 cm x 44.5 cm x 46.3 cm)

Power Supply:
4.75" high x 2.75" wide x 13.75" deep
(12.1 cm x 6.99 cm x 34.9 cm)

MSM Module Dimensions:
1.63" high x 15.26" wide x 15.25" deep
(4.1 cm x 38.8 cm x 38.7 cm)

I/O Module Dimensions:
1.63" high x 15.26" wide x 15.25" deep
(4.1 cm x 38.8 cm x 38.7 cm)

S-G8Xc, S-10G1Xc and S-10G2Xc Dimensions:
1.32" high x 6.94" wide x 11.19" deep
(3.35 cm x 17.63 cm x 28.42cm)

S-PoE Card Dimensions:
1.25" high x 14.31" wide x 4.81" deep
(3.18 cm x 36.35 cm x 12.22 cm)

WEIGHT

BlackDiamond 8810 Chassis: 79 lb (35.8 kg)

BlackDiamond 8810 Chassis fully loaded (max):
200.5 lb (90.9 kg)

BlackDiamond 8806 Chassis: 65 lb (29.5 kg)

BlackDiamond 8806 Chassis fully loaded (max):
151 lb (68.5 kg)

Power Supply: 7 lb (3.2 kg)

BlackDiamond 8900-Series Modules:

- **8900-MSM128 Module:** 6.30 lb (2.86 kg)
- **8900-10G8X-xl Module:** 7.45 lb (3.37 kg)
- **8900-G48X-xl Module:** 8.50 lb (3.85 kg)
- **8900-G48T-xl Module:** 8.55 lb (3.87 kg)
- **8900-40G6X-xm Module:** 7.30 lb (3.31 kg)
- **8900-G96T-c Module:** 8.15 lb (3.7 kg)
- **8900-10G24X-c Module:** 8.35 lb (3.79 kg)

BlackDiamond 8800 c-Series Modules:

- **MSM-48c Module:** 6.45 lb (2.93 kg)
- **S-G8Xc Card:** 2.20 lb (1.0 kg)
- **S-10G1Xc Card:** 2.10 lb (0.95 kg)
- **G48Te2 Module:** 7.75 lb (3.52 kg)
- **S-PoE Card:** 0.80 lb (0.36 kg)
- **G48Tc Module:** 7.75 lb (3.52 kg)
- **G24Xc Module:** 6.95 lb (3.15 kg)
- **G48Xc Module:** 7.55 lb (3.42 kg)
- **10G4Xc Module:** 6.50 lb (2.95 kg)
- **10G8Xc Module:** 6.91 lb (3.13 kg)

BlackDiamond 8500-Series Modules:

- **8500-MSM24 Module:** 6.45 lb (2.93 kg)
- **8500-G48T-e Module:** 7.75 lb (3.52 kg)
- **8500-G24X-e Module:** 6.95 lb (3.15 kg)

POWER

BlackDiamond 8810 Chassis with Fan Trays:
55W (Heat Dissipation: 188 BTU)

BlackDiamond 8806 Chassis with Fan Trays:
45W (Heat Dissipation: 154 BTU)

BlackDiamond 8900-Series Modules:

8900-MSM128 Module: 150W (Heat Dissipation: 512 BTU)

10G8X-xl Module: 250W (Heat Dissipation 853 BTU)

G48T-xl Module: 150W (Heat Dissipation 512 BTU)

G48X-xl Module: 175W (Heat Dissipation 598 BTU)

40G6X-xm Module: 140W (Heat Dissipation 478 BTU)

8900-10G24X-c Module: 250W (Heat Dissipation: 853 BTU)

8900-G96T-c Module: 250W (Heat Dissipation: 699 BTU)

BlackDiamond 8800 c-Series Modules:

MSM-48 Module: 150W (Heat Dissipation: 512 BTU)

G48Te2 Module: 110W (Heat Dissipation: 376 BTU)

G48Tc Module: 110W (Heat Dissipation: 376 BTU)

G48Tc Module with S-PoE card: 110W (Heat Dissipation: 376 BTU)

G24Xc Module: 100W (Heat Dissipation: 341 BTU)

G48Xc Module: 125W (Heat Dissipation: 427 BTU)

10G4Xc Module: 100W (Heat Dissipation: 341 BTU)

10G8Xc Module: 135W (Heat Dissipation: 461 BTU)

BlackDiamond 8500-Series Modules:

8500-MSM24 Module: 150W (Heat Dissipation: 512 BTU)

8500-G48T-e Module: 110W (Heat Dissipation: 376 BTU)

8500-G24X-e Module: 100W (Heat Dissipation: 341 BTU)

LEGACY PRODUCTS

Management Switch Modules:

MSM-G8X Module: BlackDiamond 8800 Management Switch Module, with 8 1000BASE-X SFP ports

MSM-48 Module: BlackDiamond 8800 Management Switch Module, no I/O port

I/O Module Options:

G48Pe 48-port 10/100/1000BASE-T Gigabit Ethernet module with PoE 2:1 oversubscription

G48T 48-port 10/100/1000BASE-T Gigabit Ethernet module

G48P 48-port 10/100/1000BASE-T Gigabit Ethernet module with PoE

G48Ta 48-port 10/100/1000BASE-T Gigabit Ethernet module

G48Te 48-port 10/100/1000BASE-T Gigabit Ethernet module 2:1 oversubscription

G24X 24-port 1000BASE-X Gigabit Ethernet module, SFP modules required

G48Xa 48-port 10/100/1000BASE-T Gigabit Ethernet module, SFP modules required

10G4X 4-port 10GBASE-X 10 Gigabit Ethernet module, XENPAK modules required

10G4Xa 4-port 10GBASE-X Gigabit Ethernet module, XFP modules required

10G4Ca 4-port 10GBASE-CX4 10 Gigabit Ethernet module

PHYSICAL SPECIFICATIONS

Weight

MSM-G8X Module: 7.5 lb (3.1 kg)

MSM-48 Module: 7.5 lb (3.1 kg)

G48Pe Module: 6.75 lb (3.06 kg)

G48T Module: 7.75 lb (3.5 kg)

G48P Module: 8 lb (3.6 kg)

G48Ta Module: 6.75 lb (3.1 kg)

G48Te Module: 6.75 lb (3.06 kg)

G48Xa Module: 8 lb (3.6 kg)

G24X Module: 7.75 lb (3.5 kg)

10G4X Module: 7.75 lb (3.5 kg)

10G4Xa Module: 6.5 lb (2.9 kg)

10G4Ca Module: 6.5 lb (2.9 kg)

Power

MSM-G8X Module: 150W (Heat Dissipation: 512 BTU)

MSM-48 Module: 150W (Heat Dissipation: 512 BTU)

G48Pe Module: 120W (Heat Dissipation: 409 BTU)

G48T Module: 105W (Heat Dissipation: 358 BTU)

G48P Module: 110W (Heat Dissipation: 375 BTU)

G48Ta Module: 120W (Heat Dissipation: 409 BTU)

G48Te Module: 120W (Heat Dissipation: 409 BTU)

G24X Module: 105W (Heat Dissipation: 358 BTU)

G48Xa Module: 105W (Heat Dissipation: 358 BTU)

10G4X Module: 105W (Heat Dissipation: 358 BTU)

10G4Xa Module: 120W (Heat Dissipation: 409 BTU)

10G4Ca Module: 105W (Heat Dissipation: 358 BTU)

IEEE 802.3 Standard
G48Pe, G48T, G48P, G48Te and G48Ta
Gigabit Ethernet modules comply with the following standards

- IEEE 802.3 10BASE-T
- IEEE 802.3u 100BASE-T
- IEEE 802.3ab 1000BASE-T

MSM-G8X Gigabit Ethernet module complies with the following standard: IEEE 802.3z 1000BASE-X

10GX4 and 10G4Xa 10 Gigabit Ethernet modules comply with the following standard: IEEE 802.3ae 10GBASE-X

10G4Ca complies with the following standard:
IEEE 802.3ak 10GBASE-CX4

Operating Specifications

OPERATING CONDITIONS

Operating Temperature Range:
0° C to 40° C (32° F to 104° F)

Operating Humidity:
10% to 93% relative humidity, non-condensing

Operational Shock:
30 m/s2 (3g), 11ms, 60 Shocks

Operational Sine Vibration:
5-100-5 HZ @ 0.2G, 0-Peak, 01 Oct./min.

Operational Random Vibration:
3-500MHz @ 1.5g rms

Regulatory/Safety Standards

NORTH AMERICAN SAFETY OF ITE

- UL 60950-1:2003 1st Ed., Listed Device (U.S.)
- CSA 22.2#60950-1-03 1st Ed.(Canada)
- Complies with FCC 21CFR Chapter1, Subchapter J (U.S. Laser Safety)

- CDRH Letter of Approval (U.S. FDA Approval)
- IEEE 802.3af 6-2003 Environment A for PoE Applications

EUROPEAN SAFETY OF ITE

- EN60950-1:2001+A11
- EN 60825-1+A2:2001 (Lasers Safety)
- TUV-R GS Mark by German Notified Body
- 73/23/EEC Low Voltage Directive

INTERNATIONAL SAFETY OF ITE

- CB Report & Certificate per IEC 60950-1:2001+All Country Deviations
- AS/NZX 60950-1 (Australia/New Zealand)

EMI/EMC Standards

NORTH AMERICA EMC FOR ITE

- FCC CFR 47 part 15 Class A (U.S.)
- ICES-003 Class A (Canada)

EUROPEAN EMC STANDARDS

- EN 55022:1998 Class A
- EN 55024:1998 Class A
  - Includes IEC 61000-4-2, 3, 4, 5, 6, 8, 11
- EN 61000-3-2,3 (Harmonics & Flicker)
- ETSI EN 300 386:2001 (EMC Telecommunications)
- 89/336/EEC EMC Directive

INTERNATIONAL EMC CERTIFICATIONS

- CISPR 22:1997 Class A (International Emissions)
- CISPR 24:1997 Class A (International Immunity)
- IEC/EN 61000-4-2 Electrostatic Discharge, 8kV Contact, 15kV Air, Criteria A
- IEC/EN 61000-4-3 Radiated Immunity 10V/m, Criteria A
- IEC/EN 61000-4-4 Transient Burst, 1kV, Criteria A
- IEC/EN 61000-4-5 Surge, 2kV, 4kV, Criteria A
- IEC/EN 61000-4-6 Conducted Immunity, 0.15-80MHz, 10V/m unmod. RMS, Criteria A
- IEC/EN 61000-4-11 Power Dips & Interruptions, >30%, 25 periods, Criteria C

COUNTRY SPECIFIC

- VCCI Class A (Japan Emissions)
- AS/NZS 3548 ACA (Australia Emissions)
- CNS 13438:1997 Class A (BSMI-Taiwan)
- NOM/NYCE (Mexico)
- MIC Mark, EMC Approval (Korea)

Telecom Standards

- ETSI EN 300 386:2001 (EMC Telecommunications)
- ETSI EN 300 019 (Environmental for Telecommunications)

IEEE 802.3 Media Access Standards

- IEEE 802.3z 1000BASE-X
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3ae 10GBASE-X
- IEEE 802.3ak 10GBASE-CX4
- IEEE 802.3af Power over Ethernet

Environmental

- EN/ETSI 300 019-2-1 v2.1.2 – Class 1.2 Storage
- EN/ETSI 300 019-2-2 v2.1.2 – Class 2.3 Transportation
- EN/ETSI 300 019-2-3 v2.1.2 – Class 3.1e Operational
- EN/ETSI 300 753 (1997-10) – Acoustic Noise
- NEBS GR-63 Issue 2 – Sound Pressure
- ASTM D3580 Random Vibration Unpackaged 1.5G

Security

- Common Criteria EAL3+

Warranty

- Ltd. 1-year on Hardware
- 90-days on Software
- BlackDiamond 8500-Series Modules Feature a Limited Lifetime Warranty with Express Advanced Hardware Replacement. Modules include:
  - 8500-MSM24
  - 8500-G24X-e
  - 8500-G48T-e
- For warranty details, visit www.extremenetworks.com/go/warranty

Ordering Information

PART NUMBER	DESCRIPTION	INFORMATION
41011	10-Slot Chassis	BlackDiamond 8810 10-Slot Chassis including Fan Tray
41012	6-Slot Chassis	BlackDiamond 8806 6-Slot Chassis including Fan Tray
60020	700W/1200W 100-240V PSU	BlackDiamond 10808/BlackDiamond 8800 700W/1200W 100-240V PSU
41050	600W/900W PSU	BlackDiamond 8806 600W/900W 100-240V PSU
60021	1200W -48V DC PSU	BlackDiamond 10808/BlackDiamond 8800 1200W -48V DC PSU
Management Module Options		
BlackDiamond 8900-Series Modules		
41231	8900-MSM128	BlackDiamond 8900 Management Switch Module, optional I/O port
BlackDiamond 8800 c-Series Modules		
41213	MSM-48c	BlackDiamond 8800 Management Switch Module, optional I/O port
BlackDiamond 8500-Series Modules		
41251	8500-MSM24	BlackDiamond 8500 Management Switch Module, optional I/O Port
I/O Module Options		
BlackDiamond 8900-xl/xm Series Modules		
41711	8900-40G8X-xm	BlackDiamond 8900-xm 6-port 40GBASE-X, QSFP+
41631	8900-10G8X-xl	BlackDiamond 8900 8-port 10GBASE-X, XFP
41531	8900-G48T-xl	BlackDiamond 8900 48-port 10/100/1000BASE-T RJ-45, optional PoE card
41521	8900-G48X-xl	BlackDiamond 8900 48-port 1000BASE-X, SFP
BlackDiamond 8900-Series Modules		
41632B	8900-10G24X-c	BlackDiamond 8900 24-port 10GBASE-X SFP+
41532	8900-G96T-c	BlackDiamond 8900 96-port 10/100/1000BASE-T MRJ-21
BlackDiamond 8800 c-Series Modules		
41516	G48Te2	BlackDiamond 8800 48-port 10/100/1000BASE-T RJ-45, optional PoE card
41517	G48Tc	BlackDiamond 8800 48-port 10/100/1000BASE-T RJ-45, optional PoE card
41543	G24Xc	BlackDiamond 8800 24-port 1000BASE-X SFP
41544	G48Xc	BlackDiamond 8800 48-port 1000BASE-X SFP
41614	10G4Xc	BlackDiamond 8800 4-port 10GBASE-XFP
41615	10G8Xc	BlackDiamond 8800 8-port 10GBASE-XFP
BlackDiamond 8500-Series Modules		
41551	8500-G48T-e	BlackDiamond 8500 48-port 10/100/1000BASE-T RJ-45, optional PoE card
41561	8500-G24X-e	BlackDiamond 8500 24-port 1000BASE-X SFP
Pluggable Options		
41821	S-G8Xc	BlackDiamond 8800 8-port 1G SFP card (add-on module for MSM)
41822	S-10G1Xc	BlackDiamond 8800 1-port 10G XFP card (add-on module for MSM)
41823	S-10G2Xc	BlackDiamond 8800 2-port 10GBASE-X SFP+ card (add-on module for MSM-24, MSM-48c and MSM128)
41811	S-PoE	BlackDiamond 8800 PoE card
Accessories		
41311	Core License	BlackDiamond 8800 ExtremeXOS Core Software Upgrade
41312	BD8800 MPLS Feature Pack	ExtremeXOS MPLS Feature Pack for BlackDiamond 8800 series switches, requires MSM128 and 8900-XL interface modules

Ordering Information

PART NUMBER	DESCRIPTION	INFORMATION
Accessories		
11011	Direct Attach Feature Pack	Direct Attach Feature Pack for Summit X450a/X460/X480, Summit X650 and BlackDiamond 8800 Series with ExtremeXOS 12.5.1 or Greater
41111	Spare Fan Tray	BlackDiamond 8810 Spare Fan Tray
65043	Spare Fan Tray	BlackDiamond 8806 Spare Fan Tray
41112	Spare PSU/Fan Controller	BlackDiamond 8800 Spare PSU/Fan Controller Board
41121	Spare Blank Panel	BlackDiamond 8800 Spare Blank Panel
41141	Mid Mount Kit	BlackDiamond 8810 Mid Mount Kit
41151	Cable Management Clip Kit	BlackDiamond 8800 Cable Management Kit
10312	QSFP+ passive copper cable, 1.0M	QSFP+ passive copper cable, 1.0M
10315	QSFP+ active fiber cable, 10M	QSFP+ active fiber cable, 10M
10318	QSFP+ active fiber cable, 100M	QSFP+ active fiber cable, 100M
10301	10GBASE-SR SFP+	10GBASE-SR SFP+, 850nm, LC Connector, transmission length of up to 300m on MMF
10302	10GBASE-LR SFP+	10GBASE-LR SFP+, 1310nm, LC Connector, transmission length of up to 10km on SMF
10309	10GBASE-ER SFP+	10GBASE-ER SFP+, 1550nm, LC connector, transmission length of up to 40km on SMF
10303	SFP+ LRM Module	10 Gigabit Ethernet SFP+ module, 1310nm, legacy MMF 220m link, LC connector
10304	10GBASE-CR SFP+ 1m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 1m
10305	10GBASE-CR SFP+ 3m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 3m
10306	10GBASE-CR SFP+ 5m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 5m
10307	10GBASE-CR SFP+ 10m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 10m
10051	1000BASE-SX SFP	1000BASE-SX SFP, LC Connector
10052	1000BASE-LX SFP	1000BASE-LX SFP, LC Connector
10053	1000BASE-ZX SFP	1000BASE-ZX SFP, Extra Long Distance SMF 70 km/21 dB Budget, LC Connector
10056	1000BASE-BX-D SFP	1000BASE-BX-D SFP, SMF (1490nm TX/1310nm RX Wavelength)
10057	1000BASE-BX-U SFP	1000BASE-BX-U SFP, SMF (1310nm TX/1490nm RX Wavelength)
10060	100FX/1000LX SFP	SFP, Dual-speed 100 FX/1000LX, LC Connector
10063	100FX SFP Module	SFP, 100BASE-FX MMF, LC Connector
10064	1000BASE-LX100 SFP	1000BASE-LX100 SFP, Extra Long Distance SMF 100 km/30dB Budget, LC Connector
10065	10/100/1000BASE-T SFP	10/100/1000BASE-T, SFP, CAT 5 cable 100m, RJ-45 Connector
10121	SR XFP Module	10GBASE-SR XFP Transceiver, 850nm up to 300m on Multimode Fiber, LC Connector
10122	LR XFP Module	10GBASE-LR XFP Transceiver, 1310nm, up to 10km on Single-mode Fiber, LC Connector
10124	ER XFP Module	10GBASE-ER XFP Transceiver, 1550nm up to 40km on Single-mode Fiber, LC Connector
10200	Tunable DWDM XFP	10 Gigabit Ethernet XFP Tunable DWDM module, C-band, SMF 80 km, LC Connector

POWER CORDS
In support of the Extreme Networks Green initiatives, power cords can be ordered separately but need to be specified at the time order. Please refer to www.extremenetworks.com/product/powercords/ for details on power cord availability for this product..

Extreme networks

http://www.extremenetworks.com/contact / Phone +1-408-579-2800

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